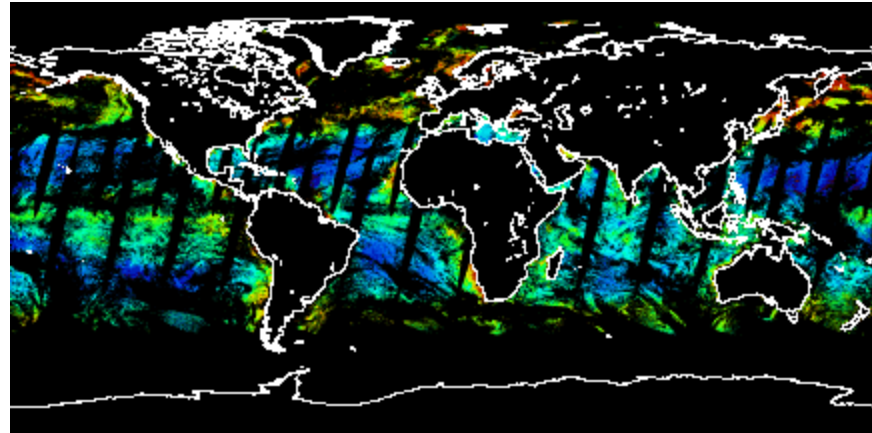


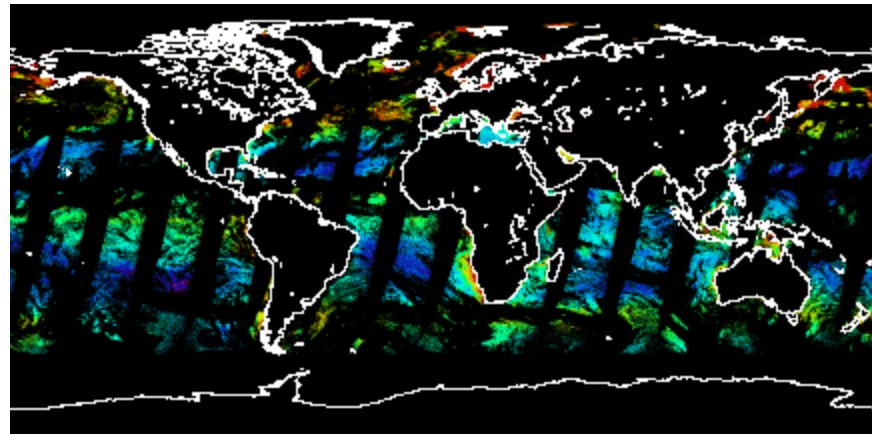
Analysis of MODIS Terra scan-
angle dependence
based on L3b oceans data
and matchups against SeaWiFS

SIMBIOS Project
Ewa Kwiatkowska
25 November 2002

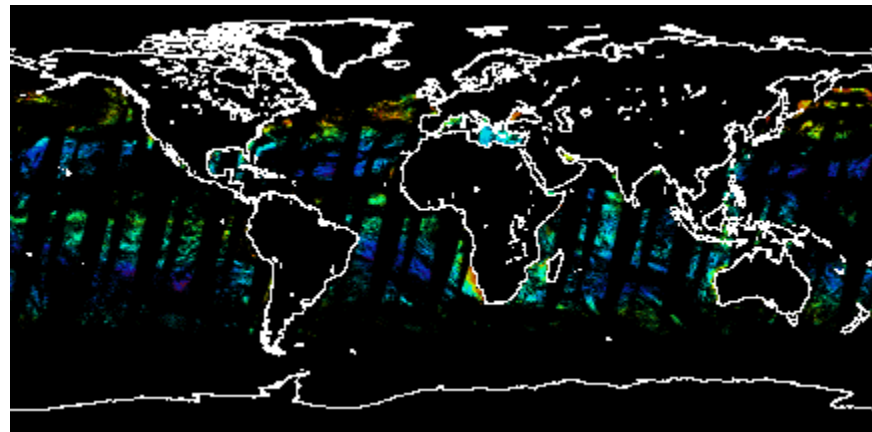
MODIS 14 May 2001
L3 binned 9km resolution
chlor_a_2 collection 4
quality 0 only

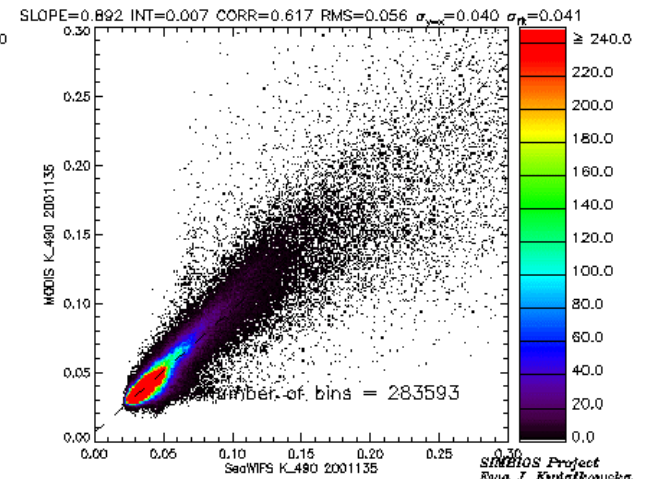
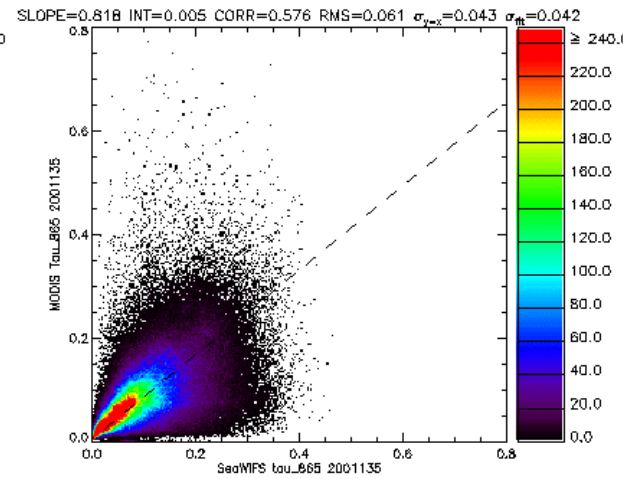
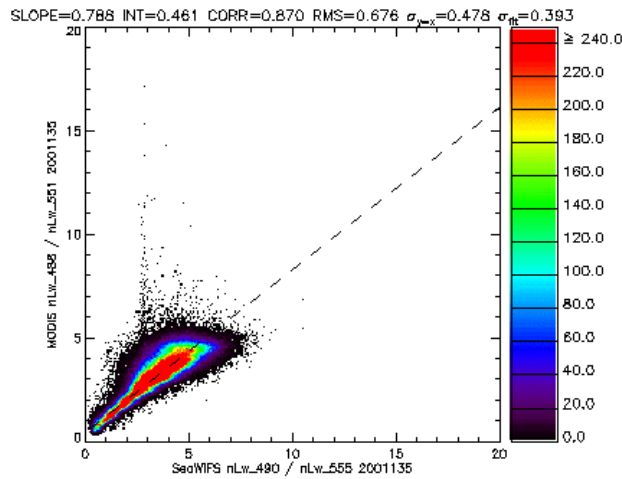
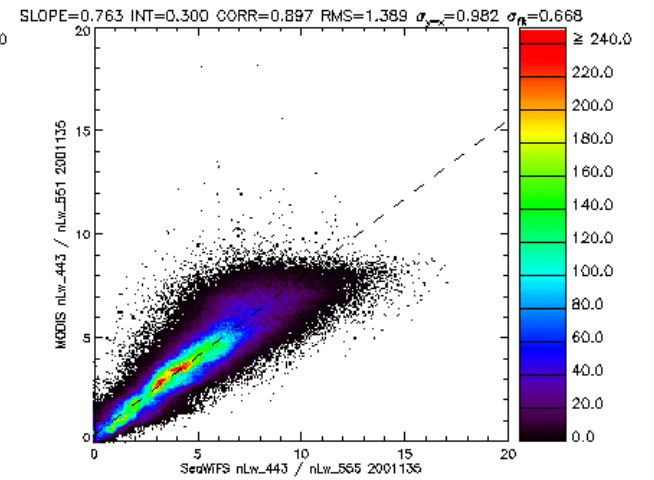
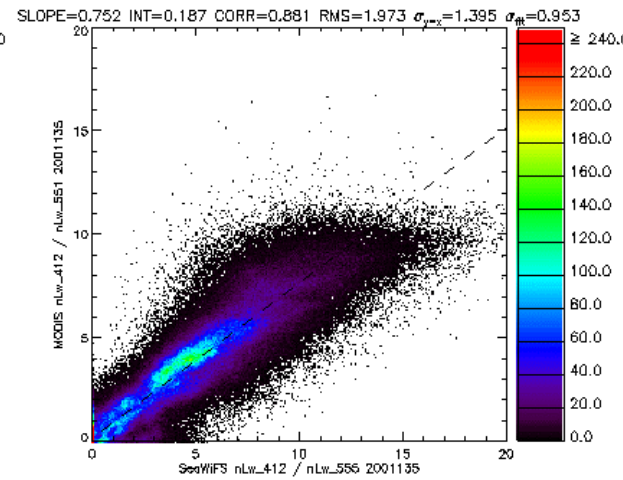
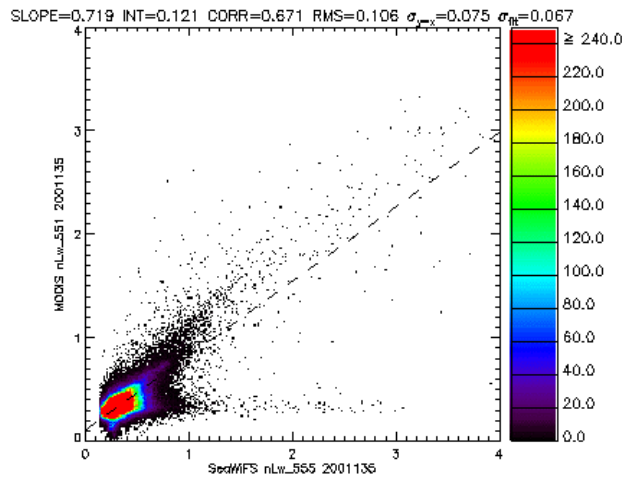
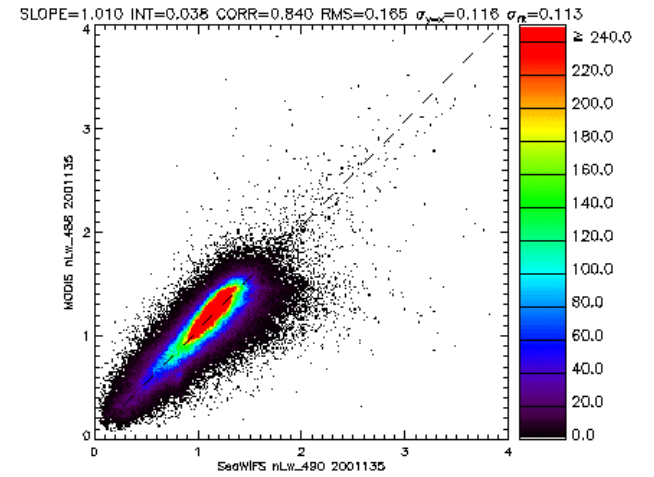
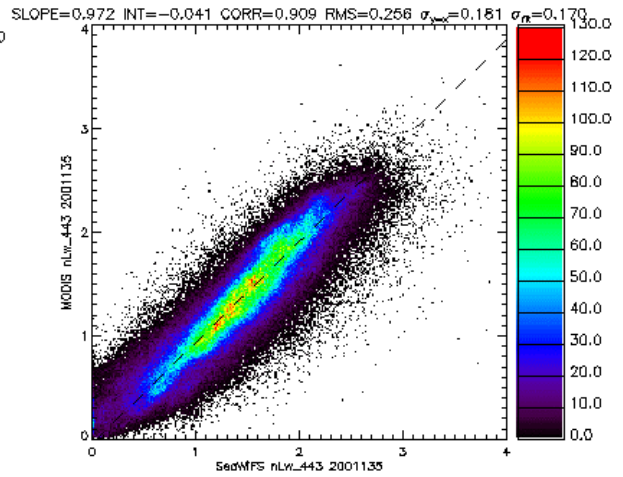
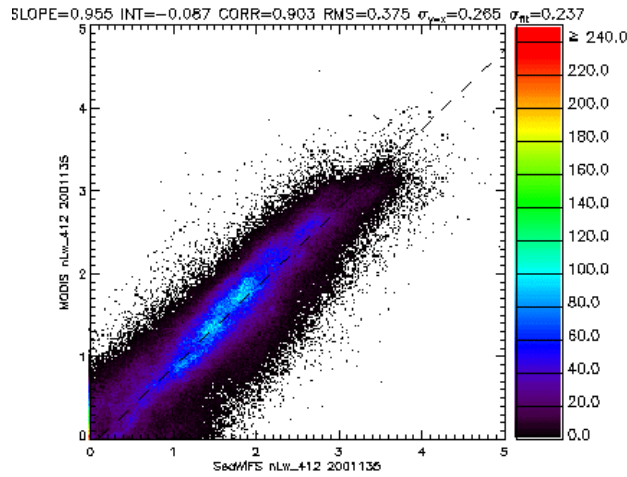


SeaWiFS 14 May 2001
L3 binned 9km resolution
chlor_a reprocessing 4
L3b standard quality

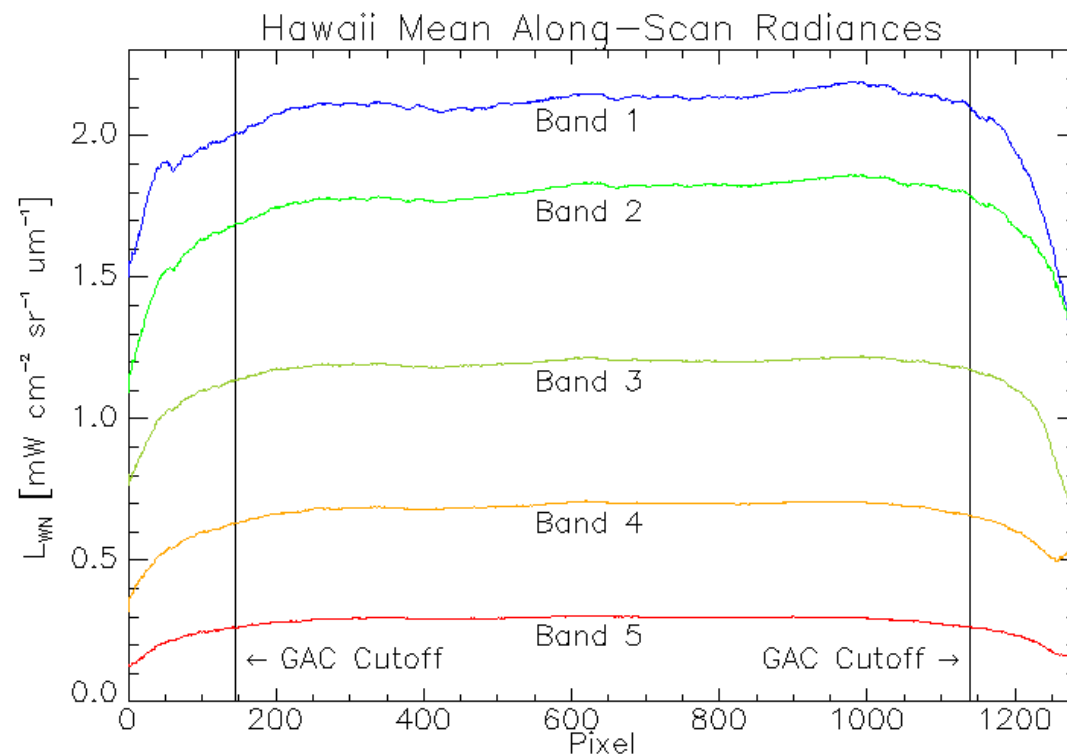


MODIS \cap SeaWiFS
14 May 2001
L3 binned 9km resolution





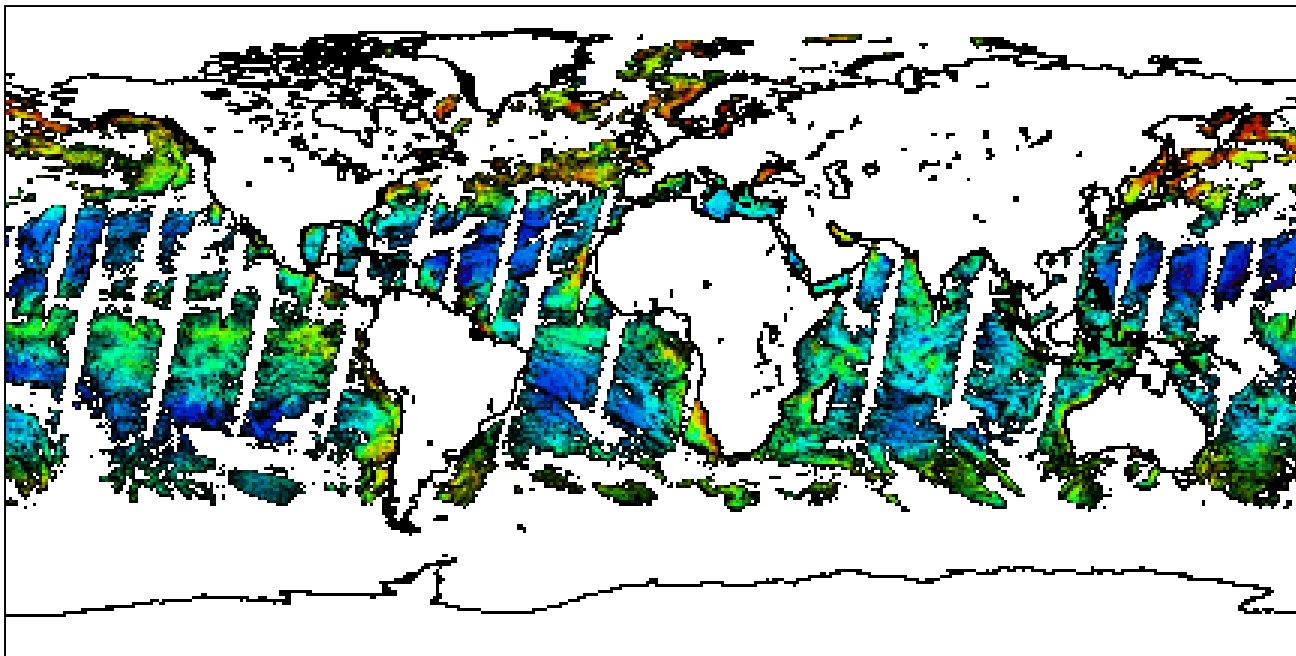
Assumption of SeaWiFS GAC scan relative stability



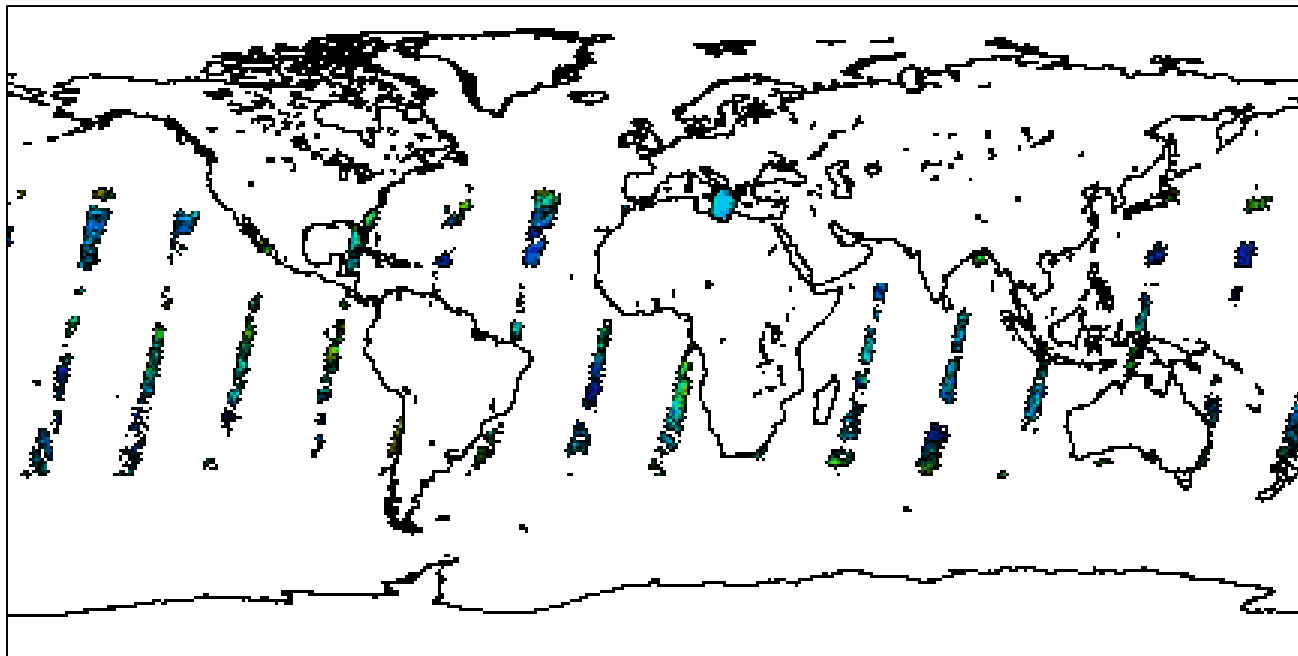
MODIS data subsetting

- $|\text{lat}| < 40\text{deg}$
- 4 sections of MODIS viewing zenith angles
 - 1 West scan edge ($>25\text{deg}$ West of nadir)
 - 2 West off nadir ($0\text{deg}-25\text{deg}$ West of nadir)
 - 3 East off nadir ($0\text{deg}-25\text{deg}$ East of nadir)
 - 4 East scan edge ($> 25\text{deg}$ East of nadir)
- additional separate tests for open ocean and clear atmosphere data

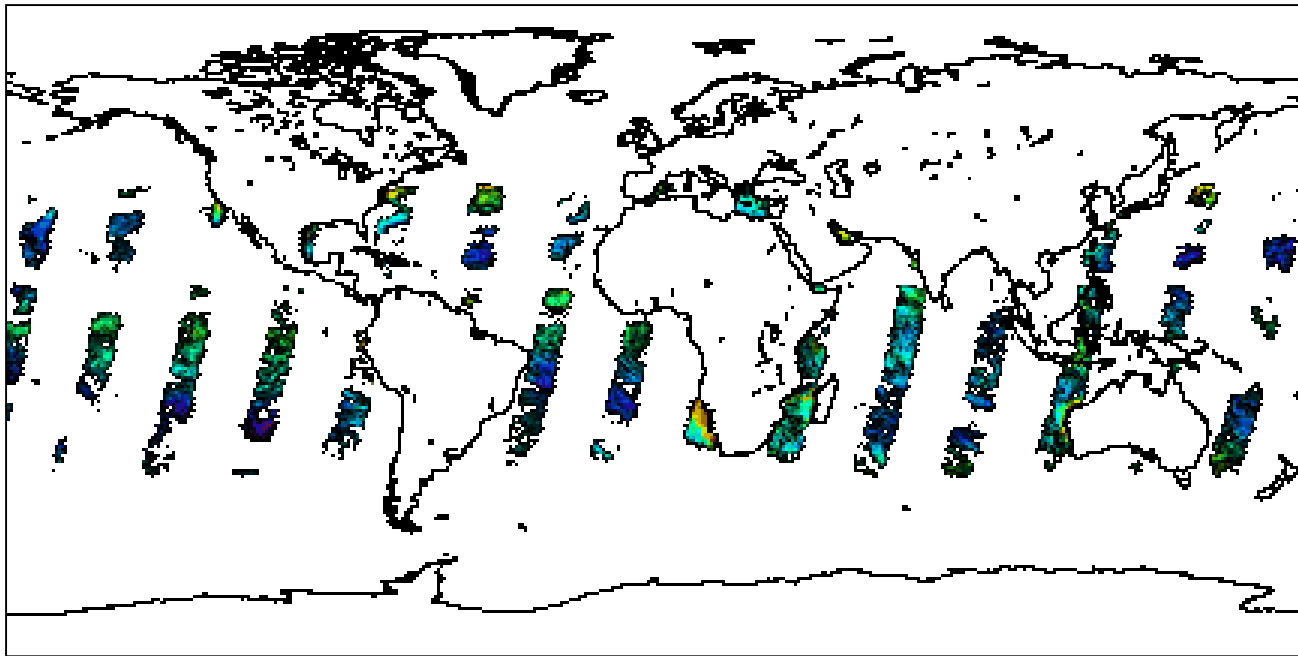
MODIS 14 May 2001



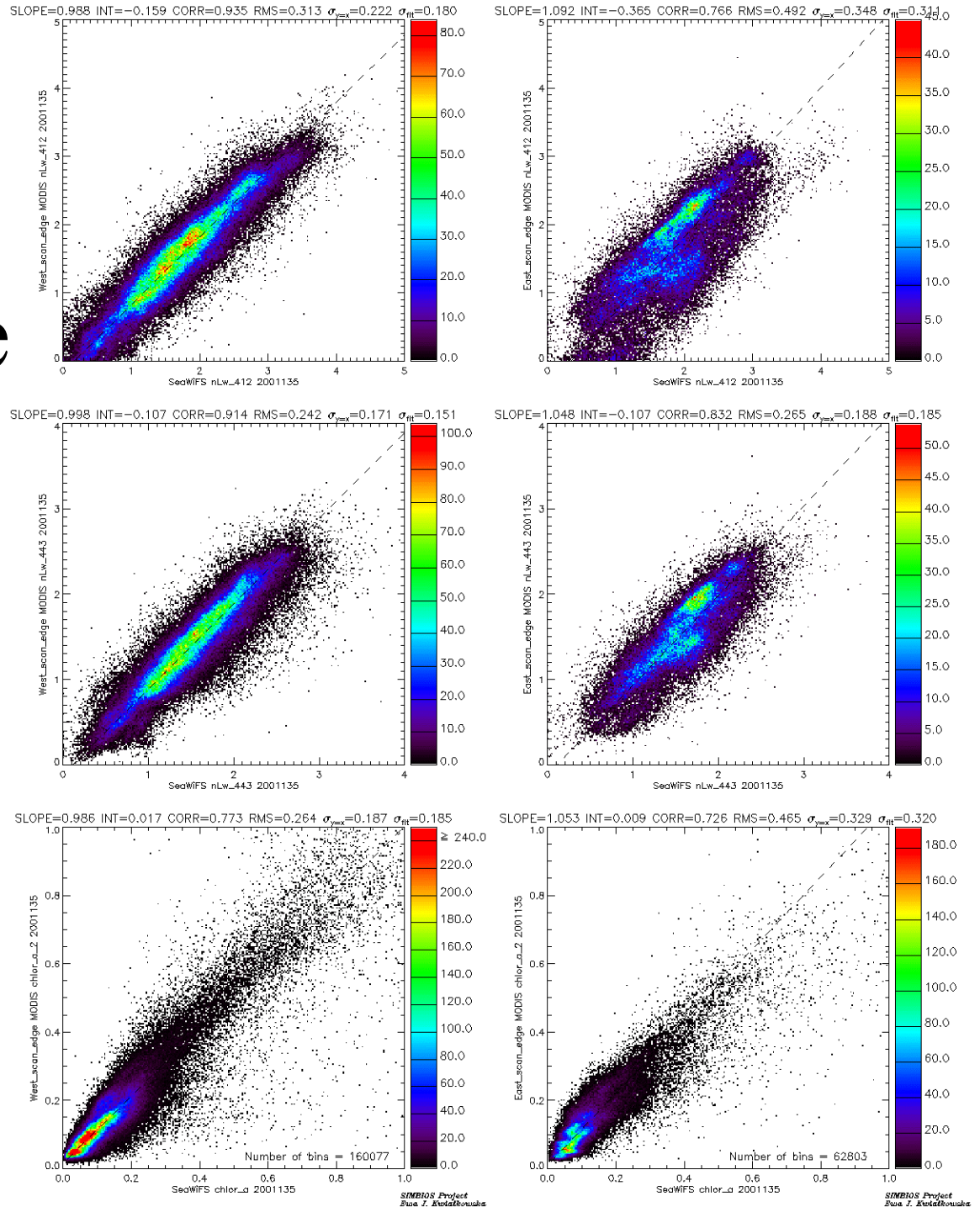
MODIS East scan edge 14 May 2001



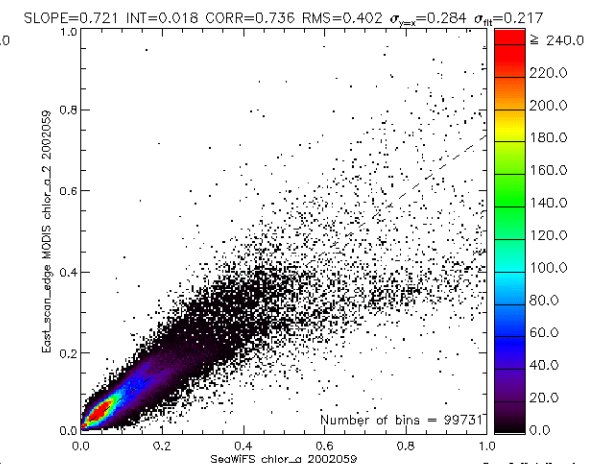
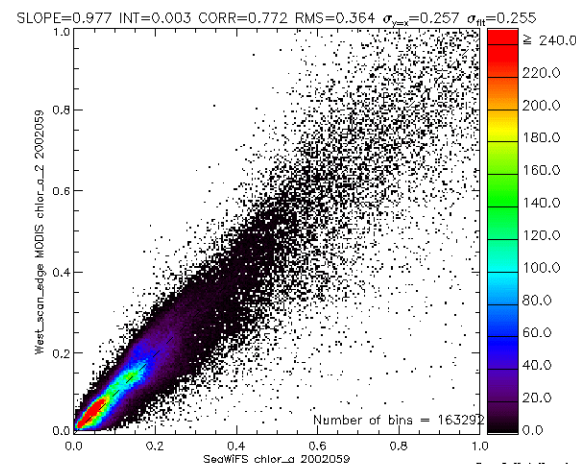
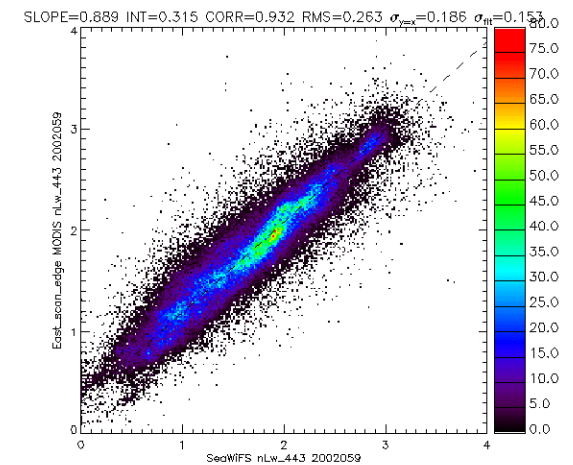
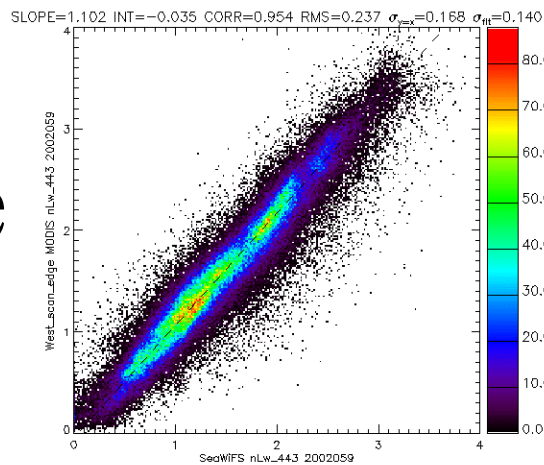
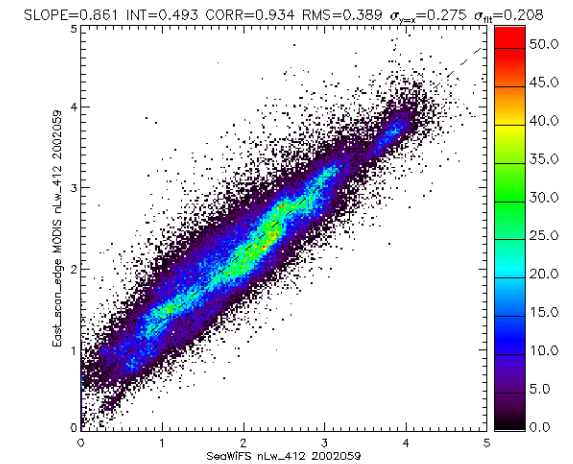
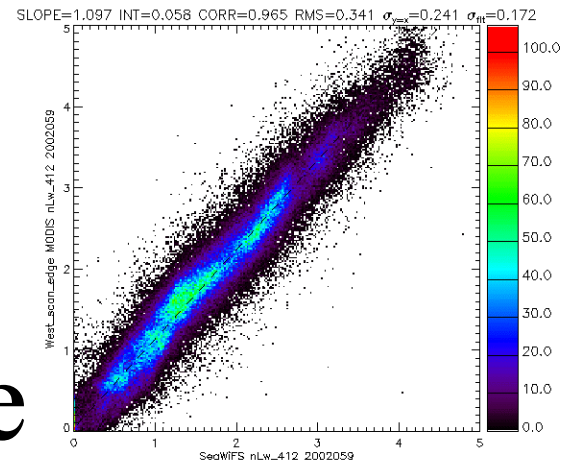
MODIS West scan edge 14 May 2001



separate West scan edge and East scan edge matchups 14 May 2001



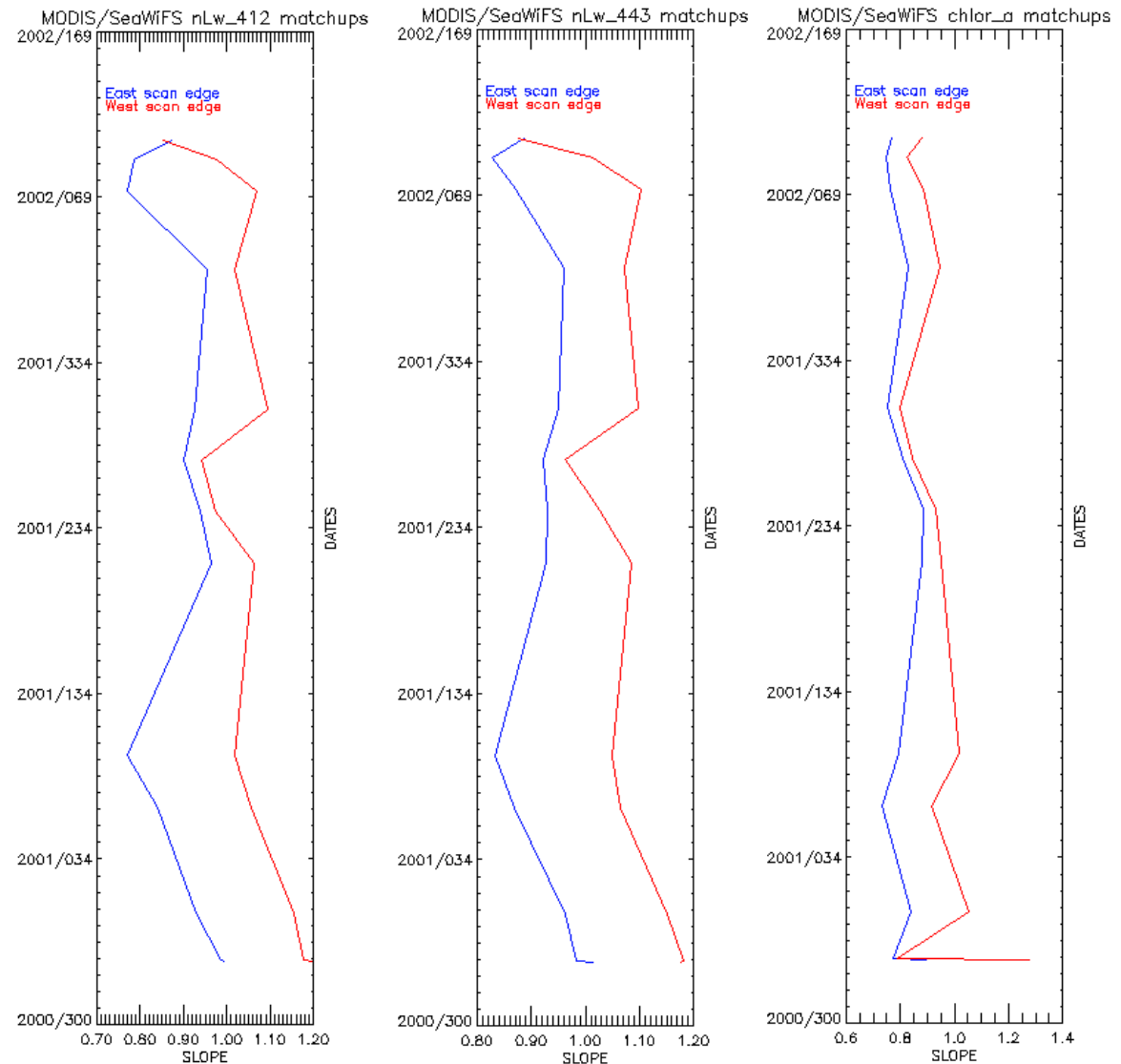
separate West scan edge and East scan edge matchups 28 Feb 2002



10 date statistics from December 2000 to April 2002

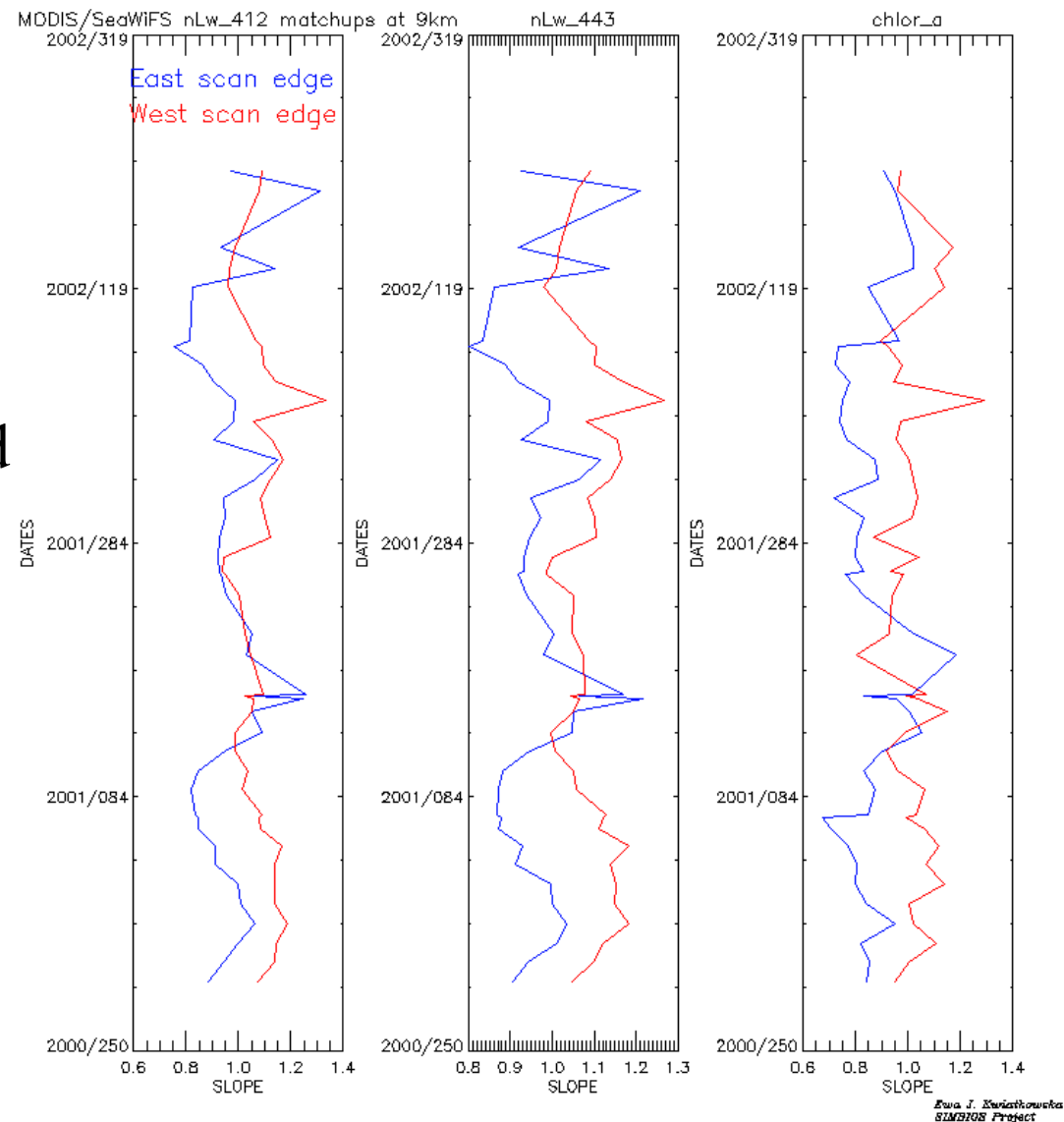
Slope in linear fit
between MODIS and
SeaWiFS

Based on Miami
RSMAS MODIS
data from May 2002



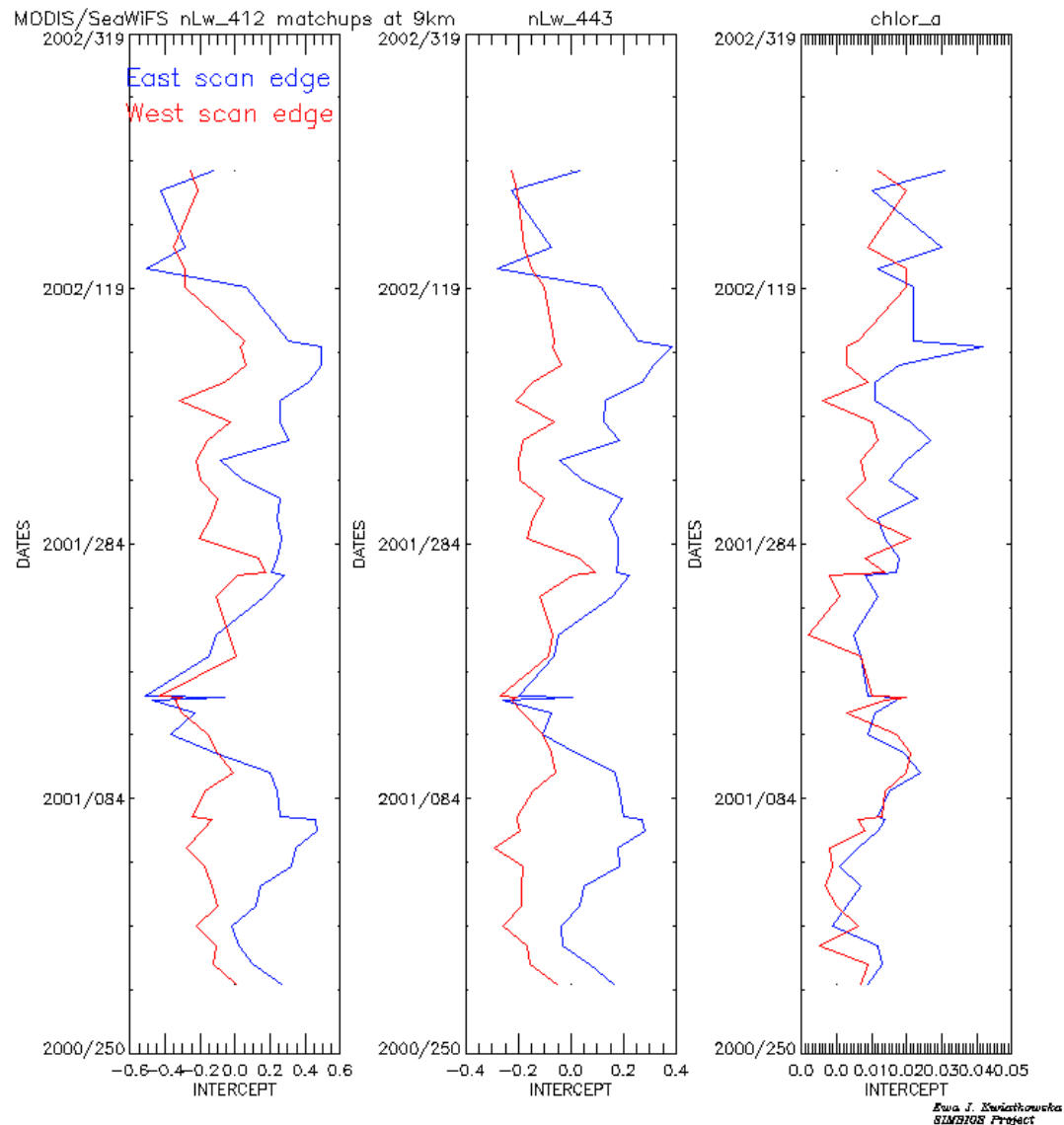
42 date statistics from October 2000 to July 2002

Slope in linear fit
between MODIS and
SeaWiFS



42 date statistics from October 2000 to July 2002

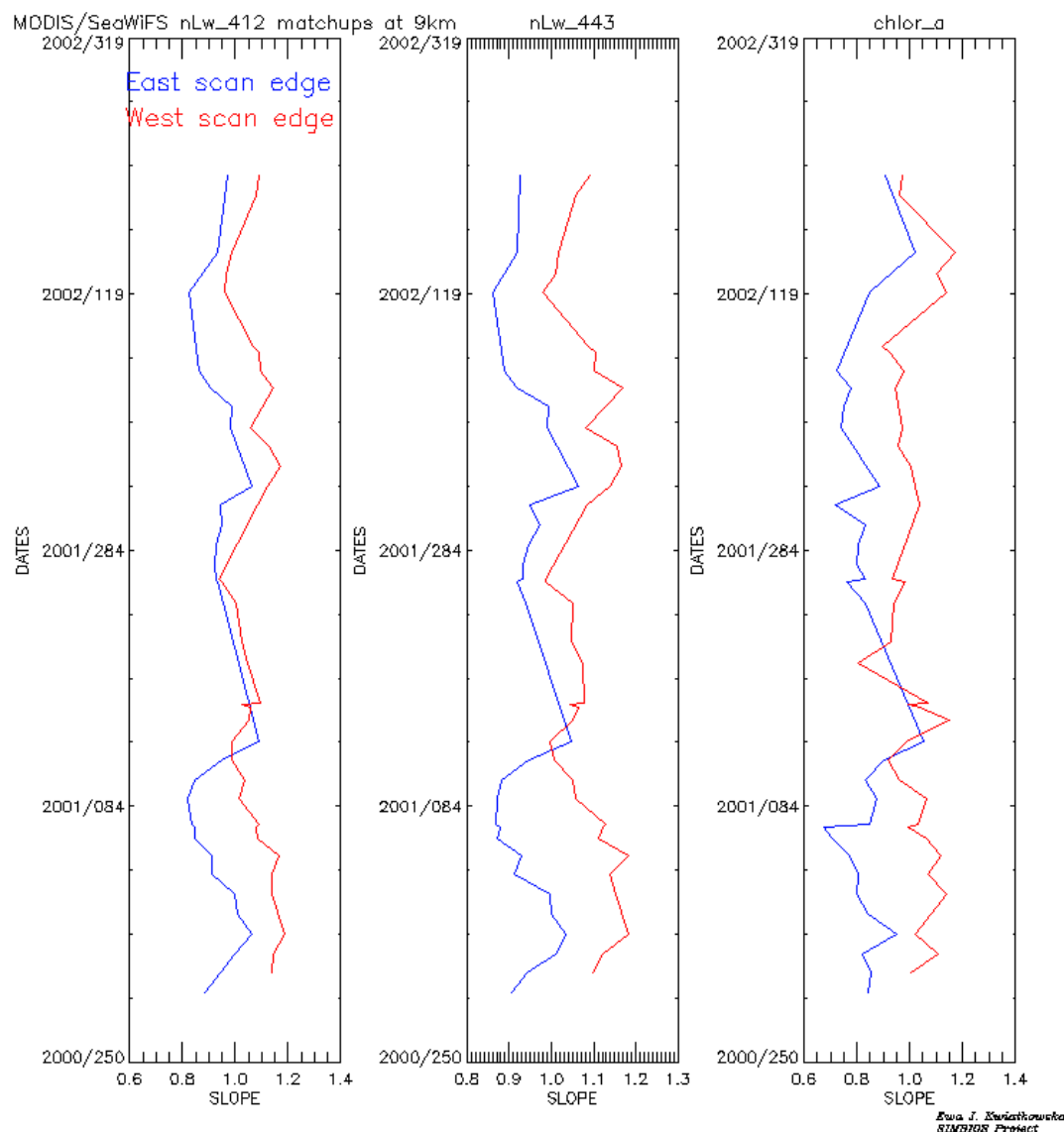
Intercept of linear fit
between MODIS and
SeaWiFS



42 date statistics from October 2000 to July 2002

Slope in linear fit
between MODIS and
SeaWiFS

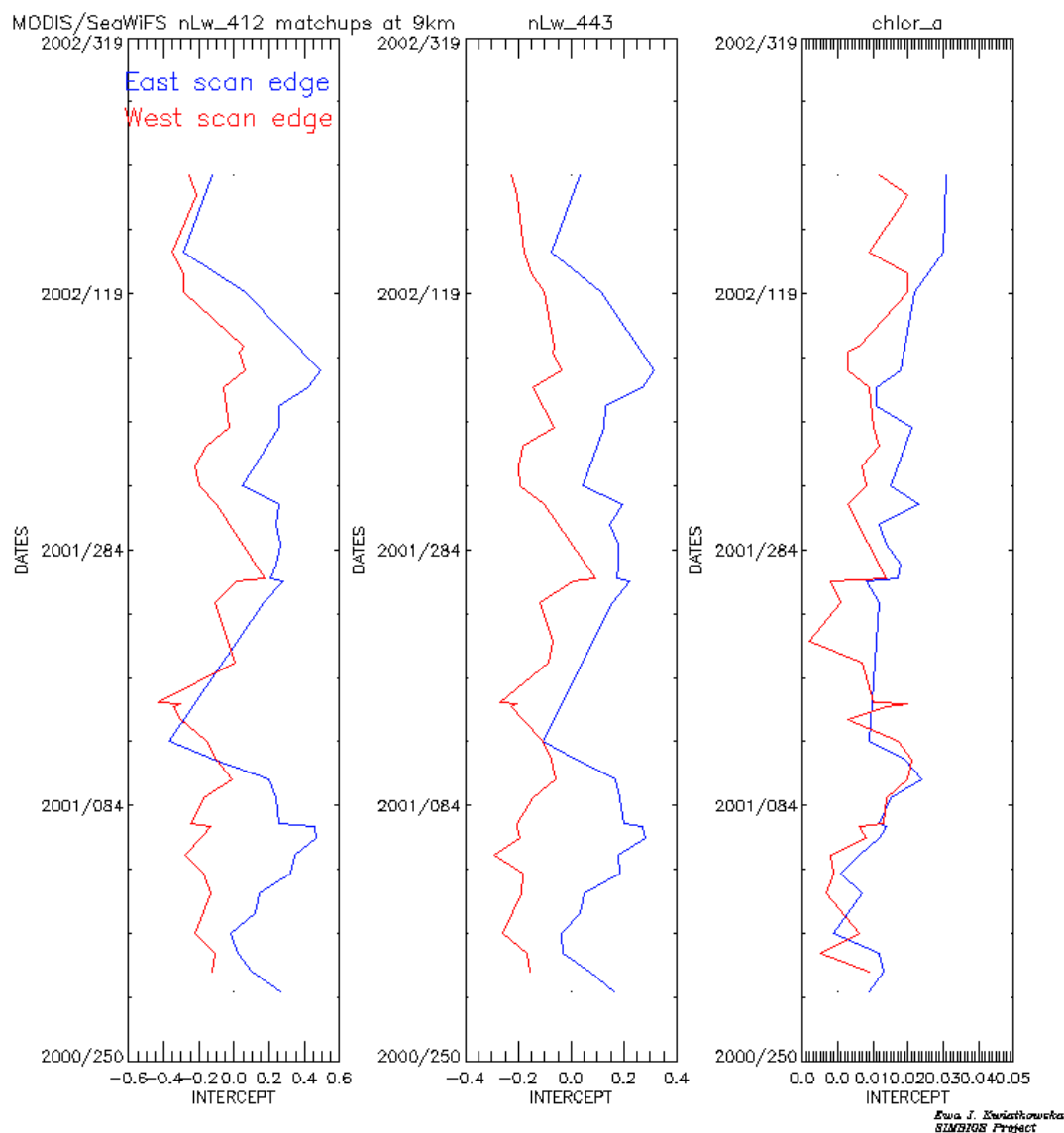
At least 40,000
common bins
between MODIS and
SeaWiFS within
Eastern and Western
scan edges



42 date statistics from October 2000 to July 2002

Intercept of linear fit
between MODIS and
SeaWiFS

At least 40,000
common bins
between MODIS and
SeaWiFS within
Eastern and Western
scan edges

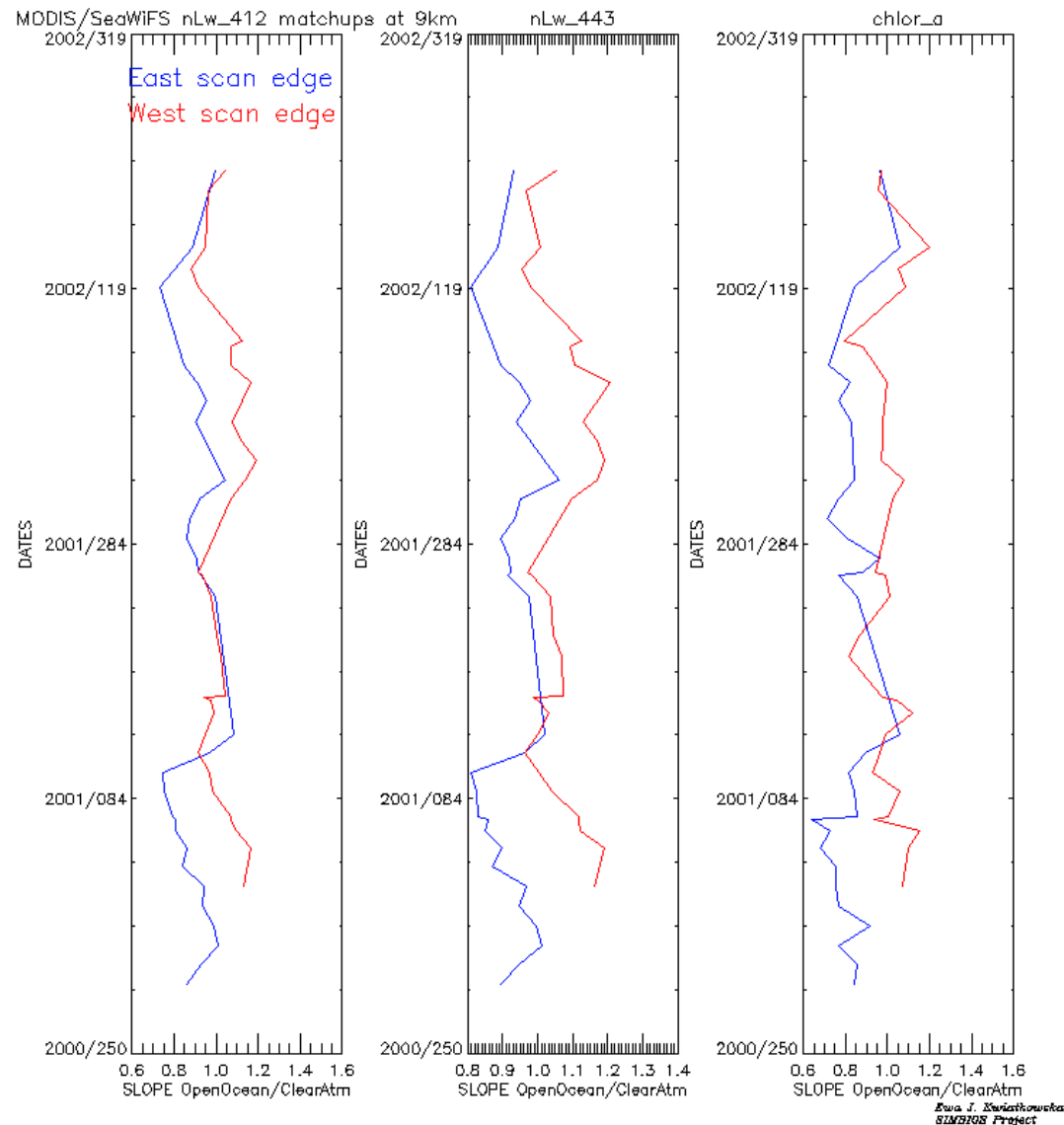


42 date statistics from October 2000 to July 2002

Slope in linear fit
between MODIS and
SeaWiFS

Open ocean and clear
atmosphere data only

At least 20,000
common bins
between MODIS and
SeaWiFS within
Eastern and Western
scan edges

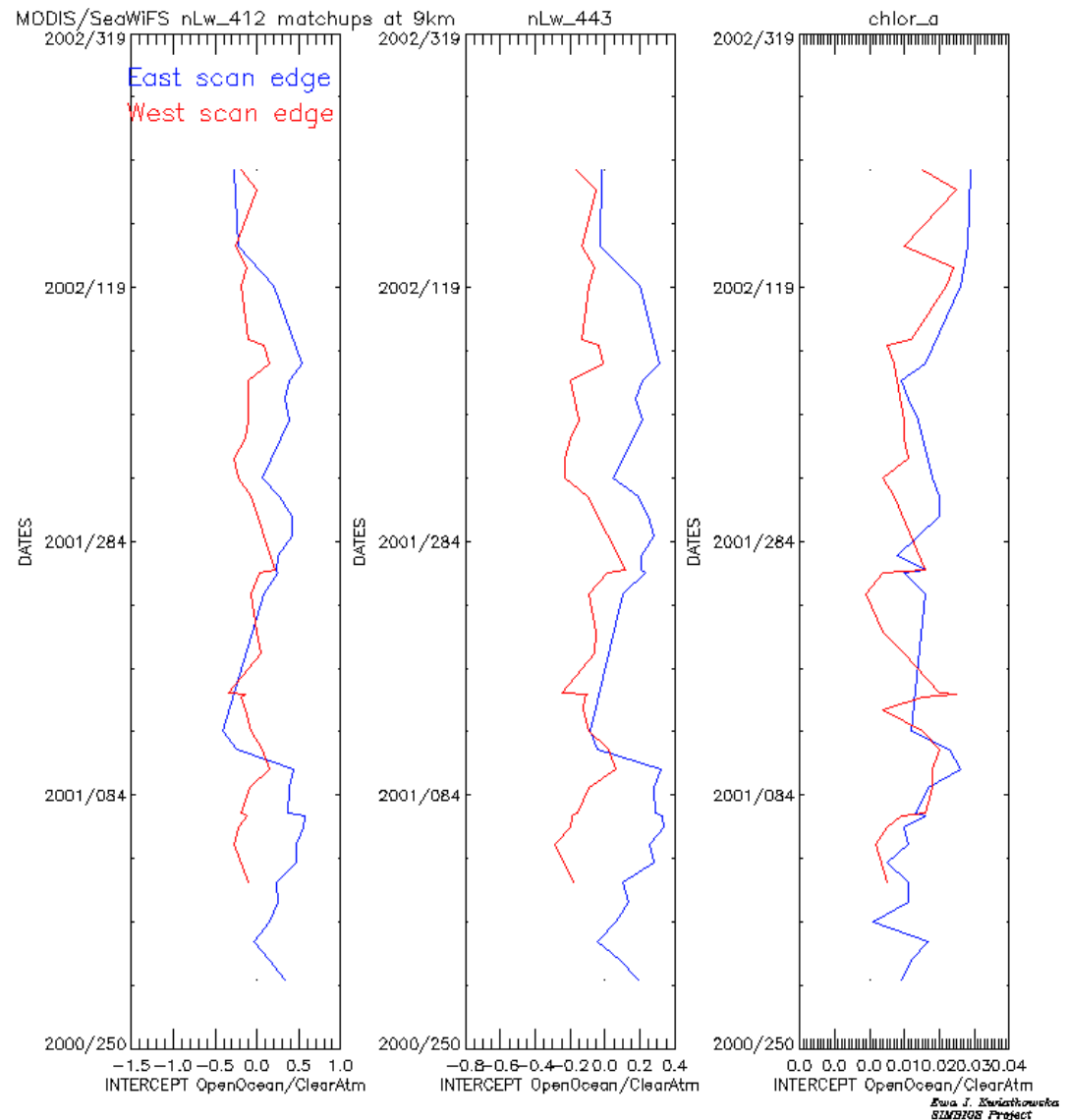


42 date statistics from October 2000 to July 2002

Intercept of linear fit
between MODIS and
SeaWiFS

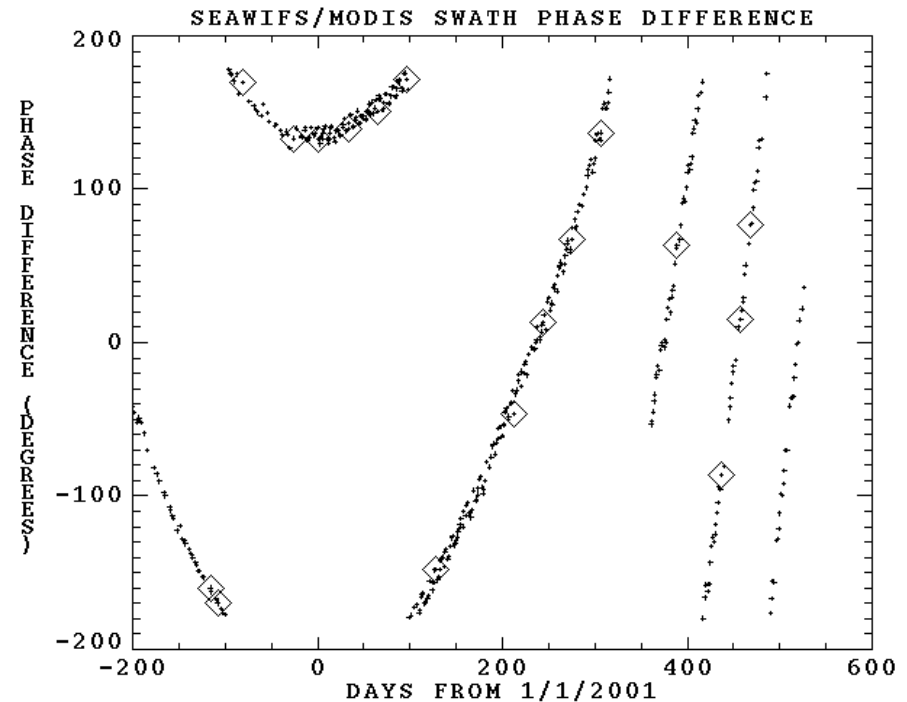
Open ocean and clear
atmosphere data only

At least 20,000
common bins
between MODIS and
SeaWiFS within
Eastern and Western
scan edges

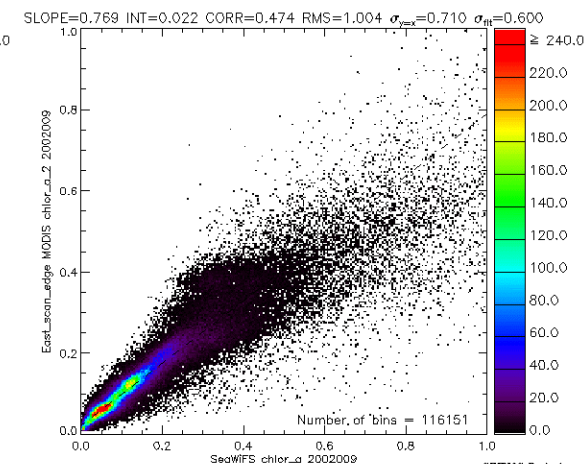
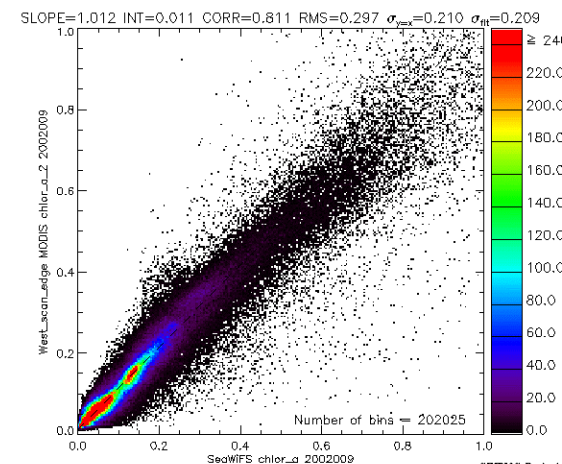
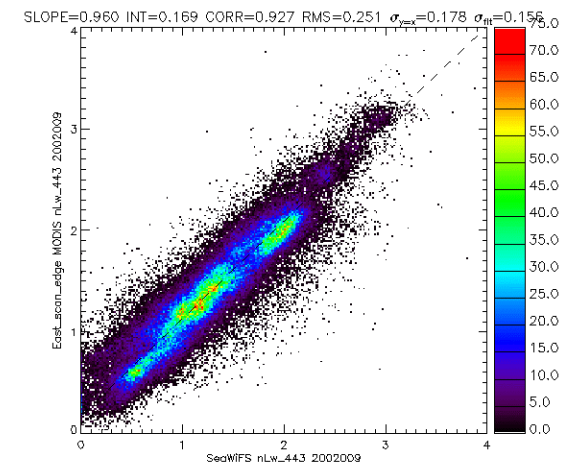
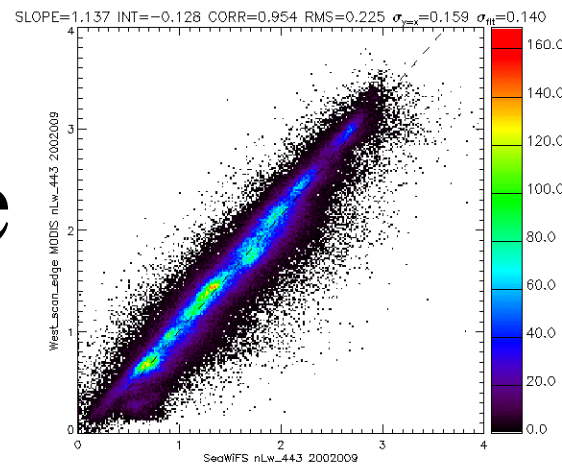
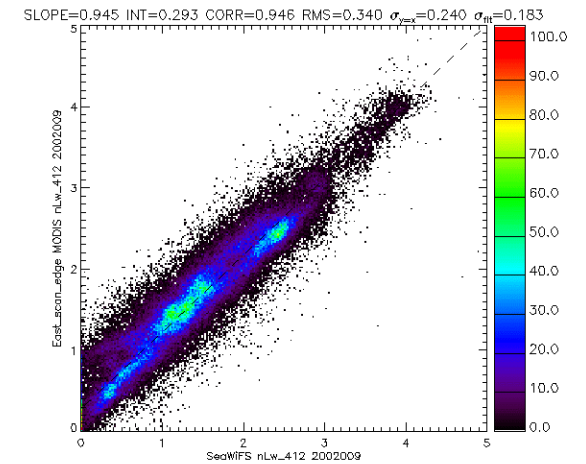
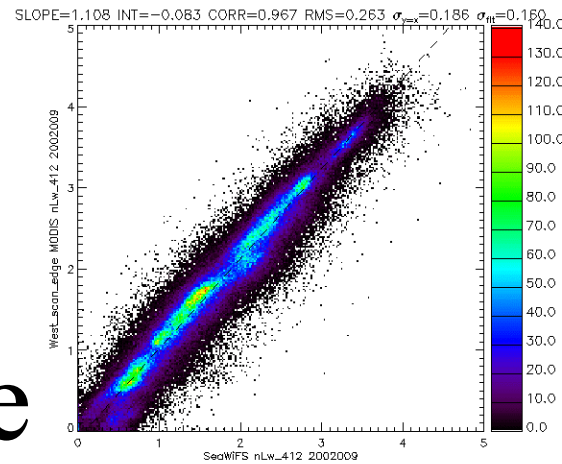


Extraction of overlapping scan lines between MODIS and SeaWiFS

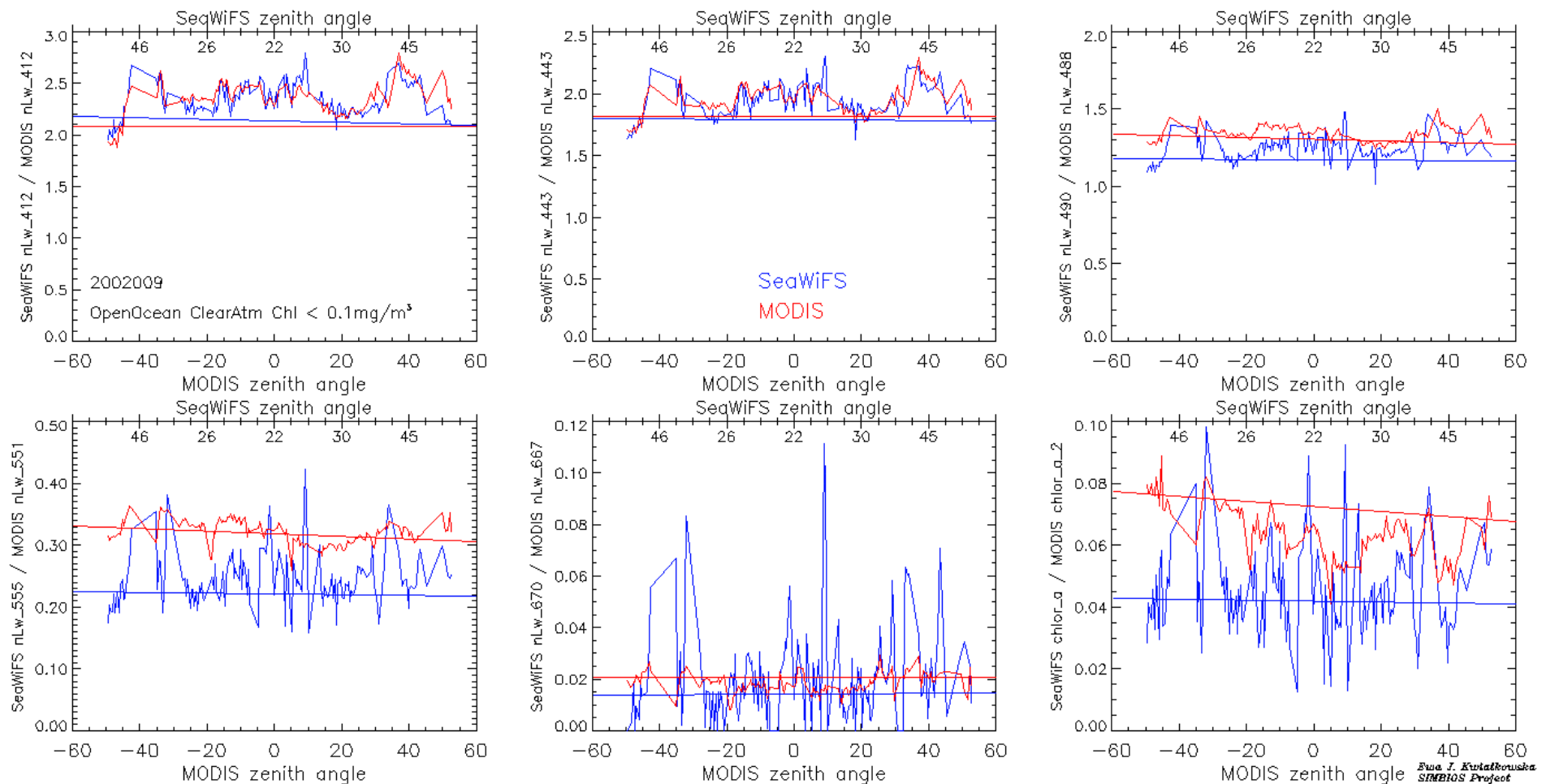
- $15\text{deg} < |\text{lat}| < 30\text{deg}$ (ocean gyres)
- open ocean
- clear atmosphere ($\text{AOT} < 0.2$)
- low chlorophyll ($\text{chlor_a} < 0.1\text{mg/m}^3$)
- dates:
- search for scan lines
with large amounts of
overlapping data
within the swath



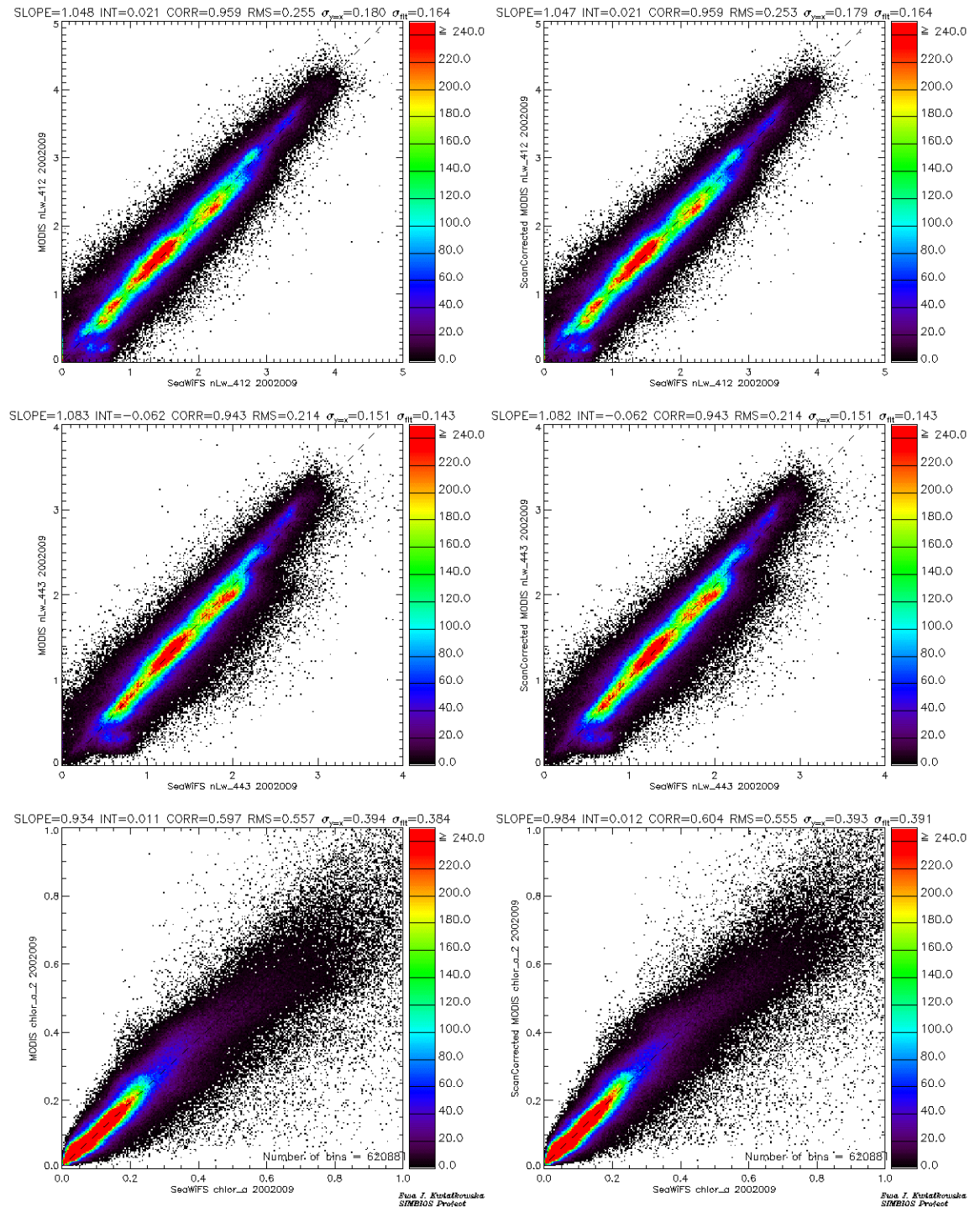
separate West scan edge and East scan edge matchups 9 Jan 2002



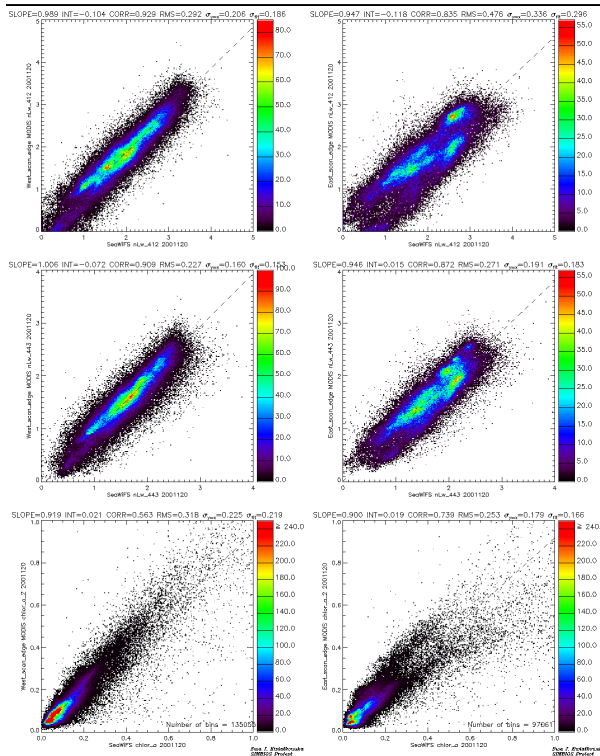
Scan-line sensor zenith angle dependence



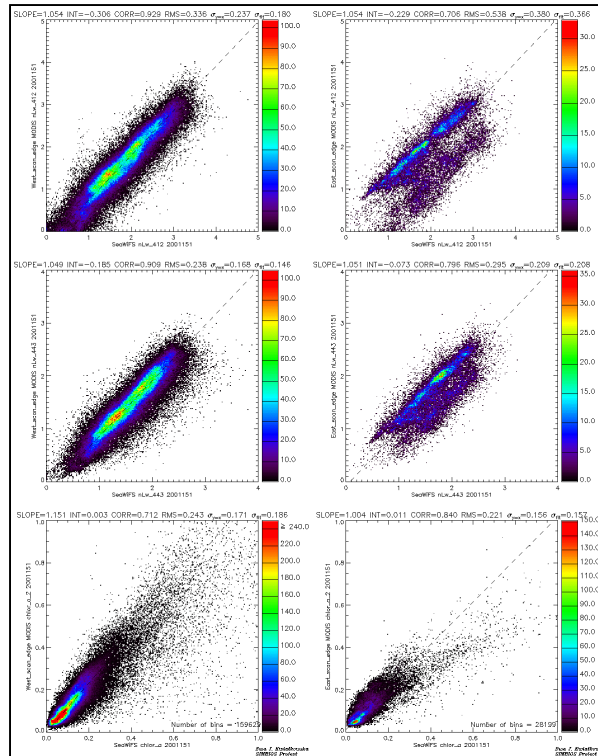
Cross-calibration
improved the matchups
between MODIS and
SeaWiFS chlorophyll
based on the slope of
0.934 to the slope of
0.984.



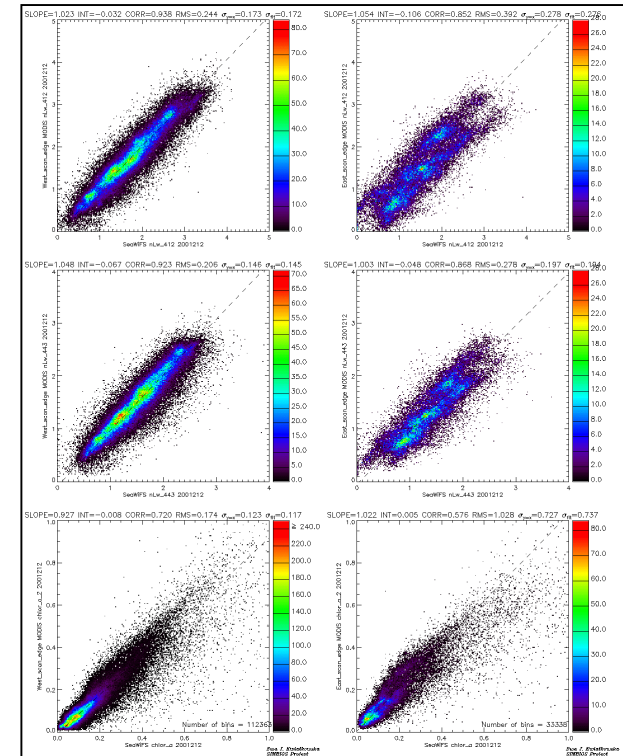
Multiple scatter plot distributions for MODIS Eastern scan edge data



30 April 2001



31 May 2001



31 July 2001

Separation of two scatter plot distributions for MODIS Eastern scan edge data

